

CLAIMS

What is claimed is:

1. Apparatus for assembling parts, said apparatus comprising:

an assembly member including at least one pocket;

means for moving said assembly member into a plurality of positions corresponding to a plurality of assembly stations of said apparatus;

means for inserting a first part in a first direction into said at least one pocket at a first of said assembly stations;

means for connecting a second part to a first part at a second of said assembly stations; and

discharge means for discharging at least a first part from said at least one pocket in a direction substantially opposite said first direction at a third of said assembly stations.

2. The apparatus of claim 1 wherein said assembly member comprises a plurality of pockets.

3. The apparatus of claim 1 wherein said assembly member comprises a rotatable wheel and said means for moving said assembly member comprises means for rotating said wheel.

4. The apparatus of claim 3 wherein said means for rotating said wheel comprise a servo motor.

5. The apparatus of claim 3 wherein said wheel is generally vertically disposed and has a substantially horizontal axis of rotation.

6. The apparatus of claim 1 wherein said discharge means comprise first means for discharging a properly connected first and second part from said at least one pocket.

7. The apparatus of claim 6 wherein said discharge means further comprise second means for discharging either a first part or an improperly connected first and second part from said at least one pocket.

8. The apparatus of claim 1 wherein said discharge means comprise means for directing a pulse of pressurized air toward a first part received in said at least one pocket.

9. The apparatus of claim 1 further comprising means disposed between said first and second assembly stations for determining whether a first part is properly inserted in said at least one pocket.

10. The apparatus of claim 1 further comprising means disposed between said second and third assembly stations for determining whether a second part is properly connected to a first part.

11. The apparatus of claim 1 further comprising means disposed between said third assembly station and said first assembly station for determining whether a first part has been discharged from said at least one pocket.

12. The apparatus of claim 1 further comprising means for urging a first part into seating contact with

said at least one pocket as said assembly member moves between said assembly stations.

13. Apparatus for assembling a cutter bar and an insert into a subassembly for use in a dispenser for thread products, said cutter bar including a cutting blade portion and said insert including a body portion defining an arbor adapted to rotatably support a spool of wound thread and a superstructure contiguous with said body portion, said superstructure including a platform, a first flange joined by a first web to said platform, a second flange joined by a second web to said platform and cutter bar receiving structure carried by said second flange, said apparatus comprising:

a assembly member including at least one pocket;

means for moving said assembly member into a plurality of positions corresponding to a plurality of assembly stations of said apparatus;

means for inserting an insert in a first direction into said at least one pocket at a first of said assembly stations;

means for delivering a cutter bar to a second of said assembly stations;

operator means for connecting a cutter bar to the cutter bar receiving structure of an insert at said second assembly station; and

discharge means for discharging at least an insert from said at least one pocket in a direction substantially opposite said first direction at a third of said assembly stations.

14. The apparatus of claim 13 wherein said means for inserting a cutter bar comprise a first conveyor for delivering inserts from a source of inserts to said first assembly station.

15. The apparatus of claim 14 wherein said means for delivering a cutter bar comprise a second conveyor for delivering cutter bars from a source of cutter bars to said second assembly station.

16. The apparatus of claim 13 wherein said assembly member includes a backing plate and said at least one pocket includes an enlarged receiving portion and a ledge, said backing plate defining an abutment surface for the first web of an insert and a support surface for the first flange of an insert, and said ledge defining a support surface for the platform of an insert.

17. The apparatus of claim 13 wherein said assembly member comprises a plurality of pockets.

18. The apparatus of claim 13 wherein said assembly member comprises a rotatable wheel and said means for moving said assembly member comprises means for rotating said wheel.

19. The apparatus of claim 18 wherein said means for rotating said wheel comprise a servo motor.

20. The apparatus of claim 18 wherein said wheel is generally vertically disposed and has a substantially horizontal axis of rotation.

21. The apparatus of claim 13 wherein said discharge means comprise first means for discharging a properly connected insert and cutter bar from said at least one pocket.

22. The apparatus of claim 21 wherein said discharge means further comprise second means for discharging either an insert or an improperly connected insert and cutter bar from said at least one pocket.

23. The apparatus of claim 13 wherein said discharge means comprise means for directing a pulse of pressurized air toward an insert received in said at least one pocket.

24. The apparatus of claim 13 further comprising means disposed between said first and second assembly stations for determining whether an insert is properly inserted in said at least one pocket.

25. The apparatus of claim 13 further comprising means disposed between said second and third assembly stations for determining whether a cutter bar is properly connected to an insert.

26. The apparatus of claim 13 further comprising means disposed between said third assembly station and said first assembly station for determining whether an insert has been discharged from said at least one pocket.

27. The apparatus of claim 13 wherein said operator means comprise an extendable and retractable linear operator.

28. The apparatus of claim 27 wherein said extendable and retractable linear operator is a piston and cylinder assembly.

29. The apparatus of claim 28 wherein said operator means further comprise a push tool connected to a

piston of said piston and cylinder assembly for pushing a cutter bar onto the cutter bar receiving structure of an insert.

30. The apparatus of claim 29 further comprising a stop block and means carried by said stop block for suspending a leading cutter bar delivered by said means for delivering a cutter bar at a location adjacent said second assembly station.

31. The apparatus of claim 30 wherein said stop block defines a surface for maintaining alignment of a cutter bar as the cutter bar is pushed onto the cutter bar receiving structure of an insert.

32. The apparatus of claim 31 wherein said means for suspending a leading cutter bar is a magnet.

33. The apparatus of claim 13 further comprising means for urging an insert into seating contact with said at least one pocket as said assembly member moves between said assembly stations.

34. A method of assembling parts, said method comprising the steps of:

(a) moving an assembly member having at least one pocket to a first assembly station;

(b) inserting a first part in a first direction into said at least one pocket at said first assembly station;

(c) moving said assembly member to a second assembly station;

(d) connecting a second part to a first part at said second assembly station;

(e) moving said assembly member to a third assembly station; and

(f) discharging at least a first part from said at least one pocket in a direction substantially opposite said first direction at said third assembly station.

35. The method of claim 34 further comprising, between steps (b) and (c), the step of determining whether a first part is properly inserted in said at least one pocket.

36. The method of claim 34 further comprising, between steps (d) and (e), the step of determining whether a second part is properly connected to a first part.

37. The method of claim 34 further comprising, following step (f), the step of determining whether a first part has been discharged from said at least one pocket.

38. A method for assembling a cutter bar and an insert into a subassembly for use in a dispenser for thread products, said cutter bar including a cutting blade portion and said insert including a body portion defining an arbor adapted to rotatably support a spool of wound thread and a superstructure contiguous with said body portion, said superstructure including a platform, a first flange joined by a first web to said platform, a second flange joined by a second web to said platform and cutter bar receiving structure carried by said second flange, said method comprising the steps of:

(a) moving an assembly member having at least one pocket to a first assembly station;

(b) inserting an insert in a first direction into said at least one pocket at said first assembly station;

(c) moving said assembly member to a second assembly station;

(d) connecting a cutter bar to the cutter bar receiving structure of an insert at said second assembly station;

(e) moving said assembly member to a third assembly station; and

(f) discharging at least an insert from said at least one pocket in a direction substantially opposite said first direction at said third assembly station.

39. The method of claim 38 further comprising, concurrently with step (b), supporting at least one of the platform, the first web and the first flange of an insert with support structure provided on said assembly member.

40. The method of claim 38 wherein said assembly member comprises a wheel, said method further comprising the step of rotating said wheel between said first, second and third assembly stations.

41. The method of claim 38 further comprising, between steps (b) and (c), the step of determining whether an insert is properly inserted in said at least one pocket.



42. The method of claim 38 further comprising, between steps (d) and (e), the step of determining whether a cutter bar is properly connected to an insert.

43. The method of claim 38 further comprising, following step (f), the step of determining whether an insert has been discharged from said at least one pocket.

44. The method of claim 38 wherein step (d) comprises pushing a cutter bar onto the cutter bar receiving structure of an insert in a substantially linear motion.

45. The method of claim 38 wherein step (d) further comprises maintaining alignment of a cutter bar during pushing thereof onto the cutter bar receiving structure of an insert.